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DRAWINGS ATTACHED

- (21) Application No. 5397/69 (22) Filed 31 Jan. 1969
 (31) Convention Application No. 138 105 (32) Filed 31 Jan. 1968
 (31) Convention Application Nos. 150 373 and 150 374
 (32) Filed 3 May 1968 in
 (33) France (FR)
 (45) Complete Specification published 2 Feb. 1972
 (51) International Classification B 65 d 49/02 // 49/06, 41/34
 (52) Index at acceptance
 B8D 65B1 65B5B
 B8T 20B 2B1A 2B1Y



(54) ANTI-FRAUD POURING SPOUTS FOR BOTTLES AND THE LIKE, AND BOTTLE CAPS ASSOCIATED THEREWITH

(71) We, LE BOUCHAGE MECANIQUE, a Body Corporate organised under the laws of the French Republic, of 62 Boulevard Victor Hugo, Neuilly-sur-Seine, France, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to bottle closing devices comprising anti-fraud pouring spouts and bottle caps associated therewith.

The term "anti-fraud" is here intended to signify that the pouring spout allows liquid to flow through it out of the bottle, but not into the bottle.

This description refers simply to ordinary glass bottles having a neck, but the invention is obviously applicable to containers which would not ordinarily be referred to as bottles. For this reason, the term "bottle" as employed throughout the specification should be taken to extend to all containers possessing a neck that could receive the described pouring spout.

It is an object of the invention to provide an anti-fraud pouring spout which can readily be fitted on a bottle adapted to receive it and which can be advantageously associated with a tamper-proof bottle cap.

According to the invention there is provided a bottle closing device comprising a cap capping an anti-fraud pouring spout arranged for fitting on the neck of a bottle (as hereinbefore defined) and having anti-fraud valve means which permit the flow of liquid out of, but not into, the bottle; the pouring spout including a sleeve of plastics material at least the lower part of which is arranged to be force fitted over a bottle neck and has on its inner surface at least one projection or depression which can co-operate with corresponding parts on a bottle neck; and the valve means comprising a cylindrical well, a base for the well defining an opening, a movable valve member hav-

ing a sealing surface to seal the opening, the upper part of the well having an annular shoulder projecting towards the axis of the well and ending in an inner sleeve projecting downwardly at an angle to the shoulder, a baffle member of generally cup form positioned between the shoulder and the base and having a closed bottom either shielding the movable valve member or itself forming the movable valve member so as to prevent access to the sealing surface and the opening, the flow of liquid through the valve means in the open position of the movable valve member being through the opening around the outside of the baffle member and through a channel defined by the inner sleeve.

The sleeve may have on its inner surface a continuous or discontinuous circumferential groove or rib which is adapted to co-operate with a corresponding continuous or discontinuous rib or groove on the neck of the bottle.

The cap is preferably of the kind having a guarantee band formed by a lower portion of its skirt which is adapted to break along a weakened line and be retained on the bottle neck when the cap is removed.

Some embodiments of the invention will now be described by way of example, reference being made to the accompanying drawings, in which:

Fig. 1 shows, in elevation, partly in section a spout according to an embodiment of the invention, without its anti-fraud movable valve member;

Fig. 2 is a view, partly sectioned, of an anti-fraud movable valve member;

Fig. 3 is an elevation in partial section, showing a capsule according to an embodiment of the invention placed on the bottle-neck, the capsule being shown crimped only in the left-hand part of the drawing, with the anti-fraud valve in the closed position, the right hand part showing the valve in the open position;

Fig. 4 shows a first variant according to the invention; and

Fig. 5 shows a second variant according to the invention.

Referring to Fig. 1 a pouring spout 1 comprises a sleeve 2 of plastics material provided with an external screw-thread 3 and having at the upper end a pouring lip 4 and at the lower end an internally bevelled flange 6 forming a conical opening 7. On the inner surface of the sleeve there is a continuous or discontinuous circumferential rib 5. A web 8 at the upper end of the sleeve 2 extends radially inwards to support a central tubular part 9, the lower part of which is provided with a plurality of recesses 10, whereas the upper part has an upwardly projecting bead 11.

Beneath the web 8, integral with the latter and extending downwardly, a sleeve 12 forms a well the height and the internal diameter of which are respectively greater than the height and the external diameter of the tubular part 9. An annular seal element 13 is arranged beneath the web 8, and is maintained in position by clamping or engagement of its interior edge in a groove such as 14 formed in the sleeve 12.

Within the well formed by the sleeve 12 there is housed (Figs. 2 and 3) a movable valve member 18 comprising a cylindrical wall 19, the upper part of which is provided with a plurality of recesses 20, and which is extended at its lower part by a conical surface 21 capable of closing an orifice 17 formed in an end wall 16 of the well 12. This end wall is fitted in a groove 15 after the valve member 18 has been introduced.

In the example illustrated, the movable valve member 18 is weighted by a ball 22 of a larger diameter than the interior of the tubular part 9 of the spout.

Referring now to Fig. 3, a substantially cylindrical closure capsule of thin aluminium of a type in current use, forms a bottle cap 23, the skirt 24 of which is provided with a set of notches or peripheral incisions 25 separated by bridging portions 26 of breakable material, whereby the upper part will constitute the closure gap 27 for the bottle, whereas the lower part will form a "guarantee band" 28 as will be described.

The cap 23 is fitted internally at its closed end with a seal element 29 arranged in a shallow groove 30.

The device which has just been described can form an assembly, of which the various constituent parts, namely cap, anti-fraud spout, and seal, are connected to one another, the spout being maintained in the cap by clamping the pouring lip 4 in a groove 30 in the wall of the cap.

This assembly is consequently better suited for storage, for handling and for automatic capping operations, than the separate parts would be.

The neck 31 of a bottle to which the device according to the invention is to be fitted comprises a tubular portion, the top part 32 of which can be smooth or striated and is formed with a groove 33 intended to receive the rib 5 of the spout; like the latter rib, the groove 33 may be continuous or discontinuous; the part 32 of the neck has an externally bevelled upper end 34 and terminates at its lower end in a shoulder 35, forming the thickened portion 36 of the bottle.

After the bottle has been filled the capping operation can be carried out in several stages, but it is better to do this in a single operation by using a pre-assembled unit consisting of the spout already fitted with its cap. This unit can be force-fitted onto the upper part of the neck of the bottle so that the sleeve 2 slides parallel to the axis of the bottle until the rib 5 of the unit enters the groove 33 on the neck of the bottle, while at the same time the flange 6 of the sleeve 2 comes into contact with the shoulder 35. The positioning of the unit is facilitated by the bevelled openings 7 and 34. In this way the neck of the bottle is fitted with a screw-thread through the intermediary of the spout 1.

After filling and capping, the skirt 24 of the cap is crimped, on the one hand to form a screw-thread 37 engaging the screw-thread 3 of the sleeve 2, so as to constitute a closure cap screwing onto the corresponding part of the spout 1, and crimped on the other hand at 38 under the thickened portion 36 of the bottle. The length of the skirt could be limited to the minimum required for crimping, but it is preferred to extend it so as to increase the guarantee of inviolability. It will also be observed that it would be possible to form the screw-thread 37 of the cap at the time of pre-assembly.

When the device is fitted to a bottle, the latter can be opened for the first time only by unscrewing the upper part of the cap, thus causing the rupture of the bridging portions 26. In this way the inviolability of the closure is ensured. Means may be provided to prevent the spout turning with the cap.

The upper part 27 of the cap, thus separated from the guarantee band 28, can be screwed again onto the screw-thread 3 of the sleeve 2, and forms a removable cap, the seal 29 continuing to provide fluid-tightness.

In this version, the peripheral line of incisions 25 in the cap will be located beneath the lower flange 6 of the sleeve 2. After the bottle has been opened the seal formed by this flange and the shoulder 35 will therefore be exposed. It is however impossible to pull off the spout 1 without leaving traces, since its external face does not offer a sufficient grip for the tools which would be used, so that any tampering would be detected.

The anti-fraud spout allows liquid to flow out of the bottle but prevents fraudulent filling

of the bottle. The relative heights of the sleeve 12 and of the cylindrical wall 19 of the valve are in fact calculated to allow a reasonable length of movement for the valve member 18. The latter closes the orifice 17 when the bottle is in its normal upright position, whereas when the bottle is in the pouring position the valve member 18 moves away from the orifice 17, at the same time as the recesses 10 of the tubular part 9 and the recesses 20 of the cylindrical wall 19 come approximately opposite each other. In this latter position, the liquid passes between the end wall 16 and the conical surface 21 of the movable valve member, enters the free space between the sleeve 12 and the cylindrical wall 19, and flows out through the recesses 20 and 10. In the closed position, when the valve member 18 is resting upon its seat formed by the orifice 17, the upper part of the cylinder 19 is still within the annular space constituted by the tubular part 9 and the sleeve 12, thus aiding its location.

Numerous modifications may be made in the device described without departing from the ambit of the invention as defined in the appended claims.

Thus the materials used for constructing the cap and the spout may be of different natures; the spout could be constructed in two parts, with a modification of the sleeve 12 possibly acting as a seal element and the sleeve 2 procuring the crimping; the flat seals may be replaced by lip seals. The ball 22 may be omitted, in which case the valve member 18 is weighted in a suitable manner for example by making the conical part 21 heavy. The design of the anti-fraud system may even be entirely different.

Two examples of this will be briefly described hereinbelow with reference to Figures 4 and 5, corresponding parts being designated by the same reference numerals as in the previous Figures, even if their form is not exactly the same.

In the variant of Fig. 4, the bottle is similar to that of Fig. 3, but the anti-fraud spout 1 consists of a simple sleeve 12 coinciding with the sleeve 2. The spout 1 does not possess a pouring lip, and the screw-thread 3 is formed in the exterior of the hollow upper part of the sleeve 2. The interior of the sleeve directly forms a large diameter well, partly closed at the top by a shoulder similar to the web 8.

This well provides a large space for the anti-fraud members, of which Fig. 4 shows a slightly different version equipped with a movable valve member and a fixed baffle. The sleeve 12 is fitted as previously with a tubular part 9. It also carries internally at its upper part ribs 39.

The removable end wall of the spout, which constitutes the seat of the valve member 18 assumes the form of a terminal piece 16 possessing a sealing lip 40 intended to embrace

the internal face of the upper rim 32 of the bottle; its lateral wall 41 carries internally ribs 42 which serve to guide the valve member 18 and also to receive a cup constituting the fixed baffle 19.

For pre-assembly, the components are threaded successively on the terminal piece 16; the ribs 39 of the sleeve then come into abutment at 43 and 44 respectively against the assembly of the terminal piece 16 and baffle 19, thus securing the latter.

The cap 23 may be initially fixed on the spout 1 by the simple effect of friction inside the skirt 24.

It is however possible to form the screw-threads 37 at the time of pre-assembly by crimping the cap on the spout 1.

The tubular sleeve 2 is extended by an annular external flange 6 of reduced thickness, externally smooth and formed internally with a rib 5 projecting on the interior face of the sleeve to engage the corresponding groove 33 on the neck of the bottle. This flange 6 is intended to pass over the top of the rim 32 of the bottle by a force-fit at the time of capping, in the same manner as in the previous example.

It will be observed that, in this variant, the incision line 25 is placed above the seal between the parts 6 and 35 of spout and bottle so that the upper part of the guarantee band 28 continues to cover the latter when the bottle is once opened, providing an additional guarantee against fraud.

The variant shown in Fig. 5 is similar; however, the thickened portion 36 is no longer located on the bottle, but on the added spout; furthermore, the crimping rib at 38 is located on the spout, and the locating groove corresponding to 33 (Figs. 3, 4) is formed on the inner face of the spout 1, of which the thin flange 6 remains free. In this version, it may therefore be advantageous to effect the whole of the crimping of the cap at 37 and at 38 when the cap is being fitted on the spout 1, and not at the time of placing on the bottle. The capping of the bottle then comprises only force-fitting the prefabricated capsule.

It will also be observed that, in this variant, it is now the lower part of the guarantee band 28 which covers the seal on the shoulder 36 and flange 6.

WHAT WE CLAIM IS:—

1. A bottle closing device comprising a cap capping an anti-fraud pouring spout arranged for fitting on the neck of a bottle (as hereinbefore defined) and having anti-fraud valve means which permit the flow of liquid out of, but not into, the bottle; the pouring spout including a sleeve of plastics material at least the lower part of which is arranged to be force fitted over a bottle neck and has on its inner surface at least one projection or depression which can co-operate with corresponding parts on a bottle neck; and the valve means compris-

- ing a cylindrical well, a base for the well defining an opening, a movable valve member having a sealing surface to seal the opening, the upper part of the well having an annular shoulder projecting towards the axis of the well and ending in an inner sleeve projecting downwardly at an angle to the shoulder; a baffle member of generally cup form positioned between the shoulder and the base and having a closed bottom either shielding the movable valve member or itself forming the movable valve member so as to prevent access to the sealing surface and the opening, the flow of liquid through the valve means in the open position of the movable valve member being through the opening around the outside of the baffle member and through a channel defined by the inner sleeve.
2. A bottle closing device according to Claim 1 in which the baffle member is movable and its base forms the movable valve member, the lateral wall of the baffle member defining recesses at its top, the lower edge of the inner sleeve defining co-operating recesses and the fluid flow being through the recesses.
3. A bottle closing device according to Claim 1 in which the baffle member is fixed and is located between ribs provided on the internal surface of the well, the fluid flow being between the ribs, over the top of the baffle member and under the bottom of the inner sleeve.
4. A bottle closing device according to any one of Claims 1 to 3 in which the cap has a long skirt of a known kind adapted to form a guarantee band which will break along a weakened line and be retained on the bottle neck when the cap is removed.
5. A bottle closing device according to Claim 4 in which the guarantee band covers the lower edge of the pouring spout.
6. A bottle closing device according to Claim 5 in which the guarantee band is crimped on to the pouring spout.
7. A bottle closing device substantially as described herein with reference to Figs. 1 to 3 or Fig. 4 or Fig. 5 of the accompanying drawings.
8. A bottle stopped with a closing device according to any of Claims 1 to 7.

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FIG.1

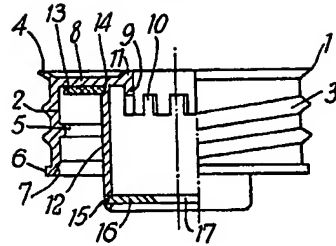


FIG.2

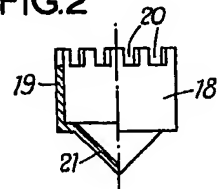


FIG.3

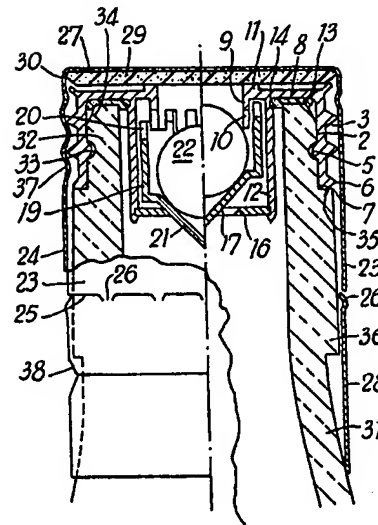


FIG.4

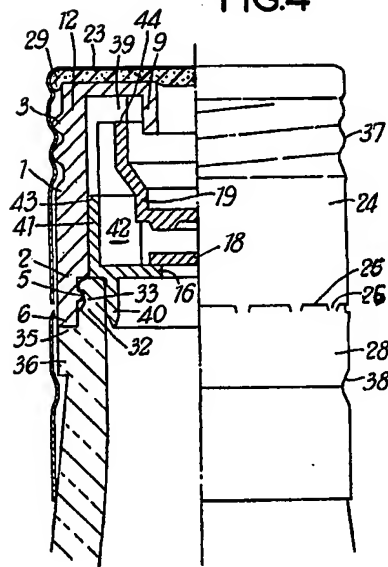


FIG.5

